ABSTRACT

A device for monitoring molecular contamination includes a measurement element comprising a high surface area material having a surface area greater than 100 square meters per gram, and a sensing circuit connected to the measurement element and providing an output signal characteristic of molecular contamination on the surface of the material. The high surface area material can be an aerogel, carbon, activated carbon, a polymer based on diphenyl p-phenylene oxide, silica, a resorcinol-formaldehyde organic polymer, alumina, or a nanocellular carbon foam or other material. The high surface area material can be doped with a specific molecule which interacts with a particular contaminant molecule.